

REMARKS

Claims 1-44 are pending in the application.

In the pending action, the Office allowed claims 11-20; objected to claims 4-6, 8-10, 24-26, 28-35, and 38-43; and rejected claims 1-3, 7, 21-23, 27, 36, 37 and 44. By this Amendment, Applicants are amending claim 1. Reexamination and reconsideration in view of the Amendments and remarks contained herein are respectfully requested.

Claims 1-3, 7, 21-23, 27, 36, 37, and 44 stand rejected under 35 U.S.C. § 102(b) as being fully met by U.S. Patent No. 4,965,847 (Jurkowski) and fully met by U.S. Patent No. 5,977,737 (Labriola). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. M.P.E.P. § 2131.

Claim 1 is repeated below:

A method of controlling a material handling system that lifts a load, the system including a motor, a brake and a drive, the method comprising:
storing a model of the motor in the drive;
generating a signal in the drive, the signal having a voltage and a frequency;
providing the signal to the motor;
sensing a current value of the signal;
providing a modeled value based in part on the sensed current value;
comparing an actual value to the modeled value to determine whether the load is stable; and
generating an output that sets the brake when the load is potentially unstable.

The Jurkowski reference does not teach or suggest a method of controlling a material handling system that lifts a load, the method including the acts of storing a model of the motor, providing a modeled value based in part on a sensed current value, and comparing an actual value to the modeled value to determine whether the load is stable. Rather, the Jurkowski reference discloses an adjustable frequency motor drive system for a hoist where the frequency of the power supplied to the motor can be selectively varied and the speed of the motor will follow the varying frequency at a slip speed relative to the frequency. A frequency value based on the frequency of the supplied power to the motor is selected. The frequency value defines the

frequency that is not to be exceeded by the motor speed. Signals representative of the actual motor speed and the selected frequency value are compared. If the signal representative of the motor speed exceeds the signal representative of the frequency value, an output signal is produced which may result in the application of the brake of the hoist.

More specifically, the hoist disclosed in the Jurkowski reference uses an encoder 38 to determine a motor speed, and the motor speed is compared to the frequency of the power supplied to the motor to determine whether the load is stable. There is no discussion within the Jurkowski reference regarding storing a model of the motor in the adjustable frequency power supply 4. Further, there is no discussion regarding providing a modeled value based on a sensed current value. Even further, there is no discussion about comparing an actual value to a modeled value for determining whether the load is stable. Accordingly, the Jurkowski reference does not teach or suggest the claimed invention, and therefore, Applicants request withdrawal of the rejection.

Turning now to the Labriola reference, the Labriola reference does not teach or suggest, among other things, a method of controlling a material handling system that lifts the load, the method including the acts of sensing a current value of a generated drive signal, and providing a modeled value based in part on the sensed current value. Rather, the Labriola reference discloses predicting a motor current without sensing the motor current. More specifically, the Labriola reference describes using an encoder to determine motor position information, and determining a motor current through modeling based on characteristics of the motor and of the output driver circuitry and based on the motor position information. See col. 4, lines 46-51. Accordingly, Labriola does not teach or suggest the claimed invention and therefore Applicants request withdrawal of the rejection.

As was agreed in the interview conducted with the Examiner dated October 20, 2003, Applicants will very briefly discuss the patentability of claim 1 over the combination of the Jurkowski and Labriola references. For establishing a *prima facie* case of obviousness, three basic criteria must be met. M.P.E.P. § 2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings. Second, there

must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both found in the prior art, not in Applicants' disclosure. M.P.E.P. § 2143. Applicants assert that the combination of the Labriola and Jurkowski references does not meet the *prima facie* case of obviousness.

First, the combination of the references does not teach or suggest providing a modeled value of the motor based in part on the sensed current value (i.e., the combination of the references does not meet the third prong of the *prima facie* case of obviousness). Additionally, the combination of the Jurkowski and Labriola references do not compare an actual value to a modeled value for determining whether the load is stable.

Second, the Labriola reference clearly describes "predicting the motor current without sensing the motor current." Col. 4, lines 50-51. Accordingly, the Labriola reference teaches away from combining with the Jurkowski reference and teaches away from the claimed invention. Therefore, claim 1 is not obvious in view of the combination of the Jurkowski and Labriola references.

Accordingly, claim 1 is patentable.

Claims 2-10 depend, either directly or indirectly, from claim 1, and consequently, include patentable subject matter for the reasons set forth above with respect to claim 1. Additionally, claims 2-10 specify additional elements and/or limitations that, in combination with claim 1, are believed to be inventive. Therefore, dependent claims 2-10 are allowable.

Claim 21 is repeated below:

A material handling system comprising:
a lifting apparatus being connectable to a load, the lifting apparatus including a brake, and a motor;
an inverter electrically connected to the motor and being operable to generate an inverter signal that drives the motor;
a current sensor being operable to sense a current of the inverter signal and to generate a current signal having a relationship to the sensed current; and
a controller being operable to receive the current signal,

determine a modeled value of the motor based in part on the current signal,
compare an actual value to the modeled value for determining whether the load is stable, and
generate an output that sets the brake when the load is potentially unstable.

The Jurkowski reference does not teach or suggest a material handling system including a controller being operable to determine a modeled value of the motor based in part on the current signal, and compare an actual value to the modeled value for determining whether the load is stable. Rather, and as discussed earlier, the Jurkowski reference discloses an adjustable frequency motor drive system for a hoist where the frequency of the power supplied to the motor can be selectively varied and the speed of the motor will follow the varying frequency at a slip speed relative to the frequency. A frequency value based on the frequency of the supplied power to the motor is selected. Signals representative of the actual motor speed and the selected frequency value are compared. If the signal representative of the motor speed exceeds a signal representative a value based on the frequency of the supplied power to the motor, an output signal is produced which may result in the application of the brake of the hoist. Accordingly, the Jurkowski reference does not teach or suggest the claimed invention, and therefore, Applicants request withdrawal of the rejection.

Turning now to the Labriola reference, the Labriola reference does not teach or suggest a material handling system including a lifting apparatus being connectable to a load, the lifting apparatus including a brake and a motor. The Labriola reference also does not teach or suggest a current sensor being operable to sense a current of the inverter signal and to generate a current signal having a relationship to the sensed current. Additionally, the Labriola reference does not teach or suggest a controller being operable to, among other things, determine a modeled value of the motor based in part on the current signal. Rather, the Labriola reference discloses motor control circuitry for a servo motor where the motor control circuitry predicts a motor current without sensing the motor current. Accordingly, the Labriola reference does not teach or suggest the claimed invention, and therefore, Applicants request withdrawal of the rejection.

As was agreed in the interview conducted with the Examiner dated October 20, 2003 (see earlier), Applicants will very briefly discuss the patentability of claim 21 over the combination of the Jurkowski and Labriola references.

First, the combination of the references does not teach or suggest a controller being operable to determine a modeled value of the motor based in part on a current signal, and to compare an actual value to the modeled value for determining whether the load is stable (i.e., the combination of the references does not meet the third prong of the *prima facie* case of obviousness). Second, the Labriola reference clearly describes "predicting the motor current without sensing the motor current." Col. 4, lines 50-51. Therefore, the Labriola reference teaches away from combining with the Jurkowski reference and teaches away from the claimed invention. Therefore, claim 21 is not obvious in view of the combination of the Jurkowski and Labriola references.

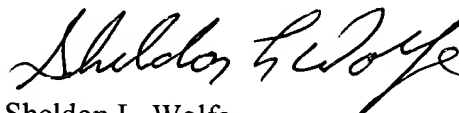
Accordingly, claim 21 is patentable.

Claims 22-44 depend, either directly or indirectly, from claim 21, and consequently, include patentable subject matter for the reasons set forth above with respect to claim 21. Additionally, claims 22-44 specify additional elements and/or limitations that, in combination with claim 1, are believed to be inventive. Therefore, dependent claims 22-44 are allowable.

CONCLUSION

Entry of the Amendment and allowance of claims 1-44 are respectfully requested. The undersigned is available for telephone consultation at any time during normal business hours.

Respectfully submitted,



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INTERVIEW SUMMARY

For interview dated:
October 20, 2003

Applicants' representative, Sheldon L. Wolfe (Reg. No. 43,996) conducted a telephone interview with Examiner Donels on October 20, 2003.

The parties first discussed U.S. Patent No. 5,997,737 (Labriola). Attorney Wolfe first directed Examiner Donels's attention to the fact that the Labriola reference relates to motor control circuitry for a servo motor, and does not make any reference to using the motor, or the control circuit, with, or in, a material handling system as specified in the claims. Attorney Wolfe argued that the reference should not be cited as a 35 U.S.C. § 102 reference against the claims.

Attorney Wolfe then referred to claims 1 and 21, which specify sensing a current, and providing or determining a modeled value based in part on the sensed current value. The modeled value is then used to determine whether the load is stable. Attorney Wolfe then directed Examiner Donels to col. 4, lines 46-51 of the Labriola reference. As shown in this text, the Labriola reference discloses predicting the motor current without sensing the motor current. More specifically, the Labriola reference uses an encoder to determine motor position information, and determines a motor current through modeling based on characteristics of the motor and of the output driver circuitry and based on the motor position information. Attorney Wolfe asserted that the Labriola reference is fundamentally different than the claimed invention since Labriola uses an encoder signal to determine motor current while the claimed invention uses motor current to determine whether a load is stable. Examiner Donels agreed that not all of the limitations of claims 1 and 21 are shown in the Labriola reference, and therefore, the rejection under section 102 was improper.

Next, the parties discussed U.S. Patent No. 4,965,847 (Jurkowski). Attorney Wolfe acknowledged that the Jurkowski reference was directed to a material handling system. Attorney Wolfe then stated that both claims 1 and 21 relate to using a model of a motor to determine a modeled value and comparing an actual value to the modeled value to determine whether the load is stable. Attorney Wolfe and the Examiner discussed the Jurkowski reference and whether the reference anticipates the claim. Examiner Donels agreed with Attorney Wolfe that the Jurkowski reference should not be cited as a section 102 reference against the claims.

Examiner Donels then said, when creating the action, he intended the references to be combined under 35 U.S.C. § 103. He did acknowledge, however, that this was not done in the pending action. Attorney Wolfe stated that he would respond to the pending action as the action has issued. However, it was agreed that Attorney Wolfe would also include a very brief discussion regarding the references as if the references were combined under section § 103. Attorney Wolfe stated that this response would be very brief since that rejection has not been made on record.

Attorney Wolfe then questioned whether the Examiner would issue a final action if the same two references were in fact combined in the next action under 35 U.S.C. § 103. The Examiner stated that, even if the same references were cited against the application, the next action would **not** be final. Attorney Wolfe then asked whether the Examiner would issue a final rejection if claim 1 would be amended as is set forth in this Amendment. The Examiner stated that he would **not** issue a final rejection if that was the only claim amendment.

The parties did not reach a final agreement regarding the patentability of the claims.